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THE "UNINUNDATED LANDS" IN PTOLEMAIC AND ROMAN EGYPT

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PART I

LAND CLASSIFICATIONS, IRRIGATION METHODS, AND DEFINITION

1. LAND CLASSIFICATIONS

Wheat was the staff of ancient life. Encouragement of wheat production was relatively more important to the ancient world than to the modern, because of the greater number of food kinds which can now, with modern refrigeration and fast transportation, be safely shipped to far-distant points. Meats, except dried or on the hoof, and milk were debarred in antiquity. Whether or not the ancient rulers realized it as a conscious problem, the importance of encouraging wheat production was vital to their world. Egypt was one of the greatest of the ancient grain-producing countries, and certainly the most dependable. The amount of its production was directly dependent upon the proper maintenance of the irrigation system.

To the Ptolemies the irrigation system of the Nile Valley and the taxation of the grain lands had the added interest that they were the source of the great wealth which enabled these rulers to play a rôle in the international politics of the Mediterranean world.¹ Under the Roman Empire the same problems of inadequate food production and distribution, which are temporarily so notable in the present breakdown of the European and Asiatic systems of transportation and production, became chronic. The second-century legislation upon waste lands bears ample testimony to that fact. Indeed, the problems of the feeding of cities and the transportation of supplies in the ancient Mediterranean world, with its

¹ Ulrich Wilcken, *Grundzüge und Chrestomathie der Papyruskunde*, Leipzig, 1912, I, 1, p. 4.

relatively large urban population, seem never to have been sufficiently well solved.¹ These factors, and particularly the constant shrinkage in food production consequent upon a faulty system of land tenure, furnish the background, if they are not actually the chief causes, of the gradual withering of the beauty and vigor of ancient intellectualism.² In any study of Egyptian land administration or irrigation they are the considerations which give that study its setting and its meaning.

In Ptolemaic Egypt the arable land of the Nile Valley was all owned by the king. It was divided into *royal domain* (γῆ βασιλική) and *land under grant* (γῆ ἐν ἀφέσει) according to the method under which it was worked for the king. Under the title *royal domain* was included all the land which the government rented directly to the inhabitants, under a personal contract between the government and the individual who leased the land. Just as the land itself formed a distinct classification as royal domain, so these direct lessees formed a distinct class of the population, called *royal peasants* (βασιλικοὶ γεωργοί).

The title *land under grant* covered all the remaining agricultural land of Egypt, under whatever form it might be held, *temple land*, *cleruch land* (which was that assigned to soldiers in active service), *land under gift*, and so-called *private land*. It is to be remembered for the Ptolemaic period that people who held land under grant had possession of it only, and not full title. The ownership remained with the king.³

When Augustus Caesar assumed control of Egypt in 30 B.C. to all intents and purposes he stepped into the royal position of the Ptolemies so far as Egypt itself was concerned. Yet he was bound by the traditions of republican Rome, and as always he was wary of offending those traditions unnecessarily.⁴ We find therefore under the empire an acceptance of the general principles of Ptolemaic

¹ These ideas are suggested by a pamphlet of Ludwig Mitteis, *Aus den griechischen Papyrusurkunden*, Leipzig, 1900.

² W. L. Westermann, "The Economic Causes for the Decline of Ancient Culture," *Amer. Historical Review*, XX, 737 ff.

³ For fuller explanation see U. Wilcken, *Papyruskunde*, I, 1, pp. 270-87, or H. Maspero, *Les finances de l'Égypte sous les Lagides*, pp. 12-28, Paris, 1905.

⁴ U. Wilcken, *Papyruskunde*, I, 1, pp. 28-29.

land tenure along with important changes in administration. These changes destroy the simplicity of administrative classification and treatment which were characteristic of the highly autocratic system of the Ptolemies. The most important change is that private ownership, in fee simple, had developed.¹ Furthermore, the royal domain of the Ptolemies was split up into several classifications—*royal domain* (γῆ βασιλική), *public domain* (γῆ δημοσία = *ager publicus*), *imperial estates* (οὐσιακὴ γῆ), and *προσόδου γῆ*. The meaning of the last classification is not yet clear. Opposed to these several varieties of “state lands” were the types grouped as private lands (ιδιωτικὴ γῆ), including a considerable amount of the old cleruch land of the Ptolemaic soldiery, to which the right of complete ownership had somehow been established (γῆ κληρουχικὴ and γῆ κατοικικὴ).²

In addition to many forms of direct taxes imposed upon the inhabitants of Egypt, the government, both under Ptolemaic and Roman rule, derived a considerable amount of its revenue from the land, either as rent from lands directly leased to the royal peasants (*state peasants* under the Roman régime), or as a land tax imposed upon the holders of Ptolemaic land under grant and upon the actual owners of private land in the period of the empire. The maintenance of the distinction between *rent* for the domains owned and leased by the state, and *taxes* upon land alienated by the state, is vital to an understanding of the Egyptian land question.

In Ptolemaic and Roman Egypt both rents and taxes upon farm lands were exacted by the government according to the productive power of the land. In order to determine this an extensive registration system was necessary. In each district and village an exact and complete list was kept of every piece of land with description of its boundaries, its productivity, and the name of the leaseholder or owner, as the case might be.³ This was the actual land register of these communities. Using it as his basis the village scribe each year sent in a report to the authorities above him of the

¹ A contrary opinion is expressed by Preisigke in *Klio*, XII, 449 ff. He believes that the *fiction* of ownership by the state was maintained to the era of Diocletian. The question is largely academic. For all practical purposes the *private land* and *catoecic land* was in private ownership.

² Wilcken, *Papyruskunde*, I, 1, pp. 287–309.

³ Preisigke in *Klio*, XII, 448.

land in his village district and the land tax, or the land rent, to be exacted from each piece. We have a number of pages from these reports of the village scribe, notably those in Tebtunis Papyri, Vol. I, from the office of Menches, village scribe (κωμογραμματεὺς) of the village of Kerkeosiris in the Fayum.¹

The quality of the land of Egypt has always been determined by the inundation, that is, by the silt deposit and the soil saturation. There is not enough rainfall south of the Delta to come into consideration. The classification which we find in the reports of the village scribes, under the inclusive rubrics of inundated (βεβρεγμένη, infrequently Νεολόβροχος), uninundated (ἄβροχος), and dry (χέρσος) land, was therefore a most natural one. It probably was a very old Pharaonic classification, and it persisted through the entire period covered by the papyri, with slight changes in the words used to differentiate the classes. For example, in the reports of Menches, of the late second century B.C., the βεβρεγμένη is frequently called ἐσπαρμένη,² or is designated as "in wheat, *aracus*," etc., or as "sown in wheat, *aracus*, beans, or barley."³ This type of classification is clearly shown in a list of cleruch holdings in the Fayum, of about 148 B.C.:

"Of —nus, son of Leonnatus, a Macedonian, 100 *arourae*; in wheat 30, unflooded 33, dry 37; total 100."⁴

The meaning of "inundated" and "dry" is obvious. There has been much speculation, however, as to the meaning of the classification ἄβροχος γῆ and its treatment by the Egyptian government in the taxation system. The confusion now existing in this regard may be shown by the statement of the current and contradictory explanations of this land category, no one of which is satisfactory.

¹ P. Teb. I, Nos. 60–88. I use throughout the method of abbreviations for the papyri established by Wilcken in the *Archiv für Papyrusforschung*. See the list in Wilcken, *Papyruskunde*, I, 1, pp. xxv–xxviii. All three kinds of land mentioned above are to be found in P. Teb. I, 61 (a); cf. Wilcken, *Papyruskunde* I, 1, p. 273, and I, 2, No. 236, Introduction.

² P. Teb. I, 60, l. 15 *et saepe*.

³ As for example in P. Teb. I, 63, line 21, σπόρος πυρῶι πε φακῶι θ ἀράκωι ζ φασήλωι κε; and line 140, πυρῶι ι φακῶι γ φασήλωι ζ.

⁴ P. Teb. I, 79, ll. 1, 3. Cf. P. Teb. I, 83, from Magdola, on which the result of the inspection is recorded. Here the production categories are sown (or unsown), unflooded, dry; ἐσπαρμένη (or ἄσπορος), ἄβροχος, χέρσος.

Quite recently the editors of the Rylands Papyri¹ have offered the suggestion that the ἄβροχος γῆ in P. Ryl. 209 and B.G.U. 84 is really *not* unirrigated land. It is land *declared* as unirrigated by the proprietors or tenants, but which proves to be actually irrigated when the official inspection is made. It is evident in this explanation that the editors have confused the terms "unflooded" and "unirrigated." ἄβροχος γῆ might well be, and in fact usually was, actually irrigated though unflooded.

In the early period of the study of the papyri, Wessely noticed the distinction between inundated (νειλόβροχος) and uninundated (ἄβροχος) land, but made the mistake of identifying the dry (χέρσος) with the uninundated land.² Bouché-Leclercq made the same mistake of equating these two classes when he stated that in the assessment of taxes the Ptolemaic state made deductions for lands not arable, such as dry land (χέρσος = γῆ ἄβροχος) or land that had become salty.³

R. Ruggiero⁴ noted, in editing P. Brux. I, that the landowners or the tenants of uninundated (ἄβροχος) land paid sometimes a higher tax or rent on it than on inundated land.⁵ To explain this he advanced the suggestion that the ἄβροχος γῆ was that land which had had the benefit of inundation, from which, however, the water had receded, leaving the land in a dry condition. On this Nile silt,

¹ Johnson, Martin, and Hunt, *Catalogue of the Greek Papyri in the Rylands Library*, Manchester, University Press, 1915, No. 209, p. 287. The Rylands Papyri will be cited as P. Ryl. throughout the remainder of this article.

² C. Wessely in *Berichte der k. Sächs. Gesellschaft der Wissenschaften, Phil.-Hist. Klasse*, Vol. XXXVII (1885), pp. 255-56: "Neben der γῆ κοινῇ ἄβροχος wird . . . noch erwähnt χέρσος, d. i. wüstes Land, jedenfalls noch zu der ἄβροχος γῆ gehörig; aber auch dieses war nicht ohne Ertrag; . . . aber es war doch gegenüber der γῆ νειλόβροχος ein relativ schlechter Boden."

³ A. Bouché-Leclercq, *Histoire des Lagides*, Paris, Vol. III, p. 185. See also n. 1, where he has confused unproductive land (ἔμβροχος or κατάβροχος) with the highly productive inundated land (βεβρεγμένη).

⁴ Quoted by Wilcken in *Archiv für Papyrusforschung*, IV, 177. Ruggiero's article in *Bull. d. Ist. di dir. Rom.*, 1904, pp. 193 ff., was not at my disposal.

⁵ Papyrus Bruxellensis I (commonly cited P. Brux. I), edited by F. Mayence and Seymour de Ricci, in *Le Musée Belge*, VIII (1904), 101 ff. The fact that the ἄβροχος paid regular taxation and a high rental was noted by the editors, and more clearly emphasized by Rostowzew, in article *frumentum* in Pauly-Wissowa, *Real-Encyklopaedie*, VII, 159 f. It is of late recognized by all the editors. See P. Ryl., 209, n. 10. But the explanations given for this fact remain unsatisfactory.

when it dried, the yield of grain was very high. As opposed to the unflooded land (*ἄβροχος γῆ*) he explained the *sown land* (*σπορίμη γῆ*) as land which was sown before the water retired, as I understand him, and which remained swampy. Wilcken has rejected this explanation,¹ stating that we must cling to the original meaning of *ἄβροχος γῆ* as land not reached by the flood.

Wilcken is correct. The mistake which has been made from the outset regarding the unflooded (*ἄβροχος*) land was the assumption that it was less productive than the flooded. Obviously the whole question of the "unflooded" lands is in need of revision. It can only be clarified by developing a clear understanding of the actual method employed by the Egyptian peasant in getting the water upon his land.

2. METHOD OF IRRIGATING THE FARM PLOTS

Information upon the irrigation system is much more detailed for the region of the Fayum than for any other part of Egypt. I think it is safe to assume, however, that the general method of irrigating is not different in the Fayum from that employed in the actual Nile Valley, although the whole matter deserves careful analysis.² In a notice to the authorities of a transfer of property near Boubastis in the Fayum, from the year 28/27 B.C., the description of the property reads: "I swear . . . that I will hand over the allotment belonging to me amounting to ten *arourae*, or however much more it may be, near Boubastis of the Heracleid division. Its boundaries are: south and north and west, canals (*διώρυγες*); east, vineyards of Apollonius."³ If we visualize for the city man this Egyptian farm of 10 *arourae* (about $6\frac{1}{4}$ acres) it will cover a space equal to three of the ordinary 300-foot city blocks. The chances of covering this particular farm entirely with water year after year, bounded as it was by irrigation ditches on three sides, were very great. It must have been entirely *γῆ βεβρεγμένη*.

¹ *Archiv für Papyrusforschung*, IV, 177.

² I am not yet convinced, for example, that the crop rotations of the Fayum are to be accepted as characteristic of those to be found in the leases from other parts of Egypt, because of a possible difference in silt deposit. Material which I have already gathered may enable me to answer the question in a later article.

³ B.G.U. II, 543.

In a marriage agreement of 66 A.D. the bride brings as part of her dowry two allotments of land in the region of Bacchias in the Fayum, one of $7\frac{3}{4}$ *arourae* (ca. 5 acres), the second of 3 *arourae* (ca. 2 acres).¹ The first of the two plots is bounded on the north and south by two other holdings (νότου πρότερον Ἡρακλείδου κλήρος, βορρᾶ Ἀπολλωνίου κλήρος);² on the west by the irrigation ditch (διῶρυξ) called "ditch of Archias," by which the allotment is drained;³ on the east by the holding of Petheus with a common supply ditch (ὕδραγωγός) between, through which the plot is irrigated.⁴ This plot clearly had a slope from west to east and could be entirely flooded at the height of the inundation, allowing the water to drain off as soon as the silt deposit and the saturation of the subsoil was regarded as sufficient.⁵ Thereafter the water could be run through the fields by means of field laterals when the soil became too dry, and the grain plots would draw their moisture from the laterals by capillary attraction.⁶

An agreement of sale (ὁμολογία) of a farmstead in the Fayum, from 83 A.D., also gives a very clear picture of the irrigation arrangements and water supply of a farm.⁷ The holding is in two plots. The first one, two *arourae* in extent, is bounded north and south by other holdings; on the west by a footpath; on the east by a canal into which the holding drains.⁸ The second plot, of one *aroura*, has as its boundaries, on the south a footpath; on the north another

¹ P. Ryl. 154.

² *Ibid.*, ll. 13-14.

³ Λιβός διῶρυξ λεγομένη Ἀρχείου δι' οὗ ἀποχεῖται ὁ κλήρος, l. 14.

⁴ Ἀπηλιώτου Πεθεύτος τοῦ Πτόλλιδος κλήρος, ἀνὰ μέσον ὄντος κοινού ὕδραγωγού δι' οὗ ποτίζεται ὁ κλήρος, l. 15. Cf. C.P.R. I, 176, l. 12, διῶρυξ δι' οὗ ποτίζεται, and C.P.R. I, 189.

⁵ For a farm quite as fortunately situated as regards irrigation, see C.P.R. I, 188, l. 6. In place of the editor's restoration I suggest λι[β]ός διῶρυξ δι' [ἧς ποτίζεται ὁ κλήρος] ἀπηλιώτου διῶρυξ εἰς ἣν ἐκχεῖται. The βορρᾶ of the editor is clearly wrong, because the drainage ditch would then have to pour into the irrigation canal. Also the directions usually occur in the order, south, north, west, east. Cf. C.P.R. I, 189, λιβός φουνίκων καὶ ὕδραγωγός ἀπηλιώτου ὕδραγωγός δι' οὗ ποτίζεται.

⁶ The second and smaller farm is apparently not so favorably situated so far as the possibilities of unhampered irrigation go. On three sides it has holdings of other people. On the west it has a drainage ditch, λιβός διῶρυξ εἰς ὃν εἰσχεῖται ὁ κλήρος, P. Ryl. 154, l. 18.

⁷ C.P.R. I, 1.

⁸ *Ibid.*, l. 8: Ἀπηλιώτου διῶρυξ εἰς ἣν ἐκχεῖται ὁ κλήρος.

holding; west, a ditch by which the plot is irrigated; east, a ditch into which it drains.¹ A later clause of the agreement provides that "no one is to hinder Maron (the purchaser), or those who may hold these fields from him, from taking away the produce from them or going in or going out through the paths, or irrigating or draining through the former bankings, field ditches, or supply ditches, as was customary in former times."² The picture of the irrigation system is here quite clear and detailed. The second plot (σφραγίς) had an irrigation ditch (διώρυξ) on the west, a drainage ditch (διώρυξ) on the east. The slope was from west to east. At the time of the Nile flood the land of this second plot would all be βεβρεγμένη, entirely flooded, so long or so often as the owners wished. After the high flood had receded or had been drained off and the ground sown, the water was let into the field (εἰς τὸν σπόρον; cf. P. Lond. I, 131, l. 401) as needed. That is, it flowed through channels increasing in size apparently in the order which they follow in the document—ἀναβολαί, ρεῖθρα, ὑδραγωγοί.³ I judge that the ἀναβολαί and ρεῖθρα correspond to what we call "field laterals" or "carrier ditches" in American irrigation. After the seed was planted the water could not be allowed to spread *over* the fields, as the seeds would certainly rot.

It is important to note that the presence upon a farm of water machines (ὄργανα, ὑδρέματα, or μηχαναί) does not imply that the land of that farm was not easily irrigated. From 291 A.D. we have an affirmation of validity of a deed of sale of 4/5 of an *aroura* of land, which is part of an 8 *arourae* plot, which again is a part of a 28 *arourae* plot, at that time split up among a number of owners.⁴

¹ *Ibid.*, ll. 9-10.

² *Ibid.*, ll. 18-19: Μηδένα κωλοῖοντα [τὸν Μάρωνα] μηδὲ τοὺς παρ' αὐτοῦ κυριεύοντας αὐτῶν καὶ τὰ ἐξ αὐτῶν περιγεγνημένα ἀποφερομένους καὶ εἰσοδεύοντας καὶ ποτίζοντας καὶ ἐκχέοντας διὰ τε τῶν πρότερον ἀναβολῶν ρεῖθρων καὶ ὑδραγωγῶν καὶ ὁδῶν κ.τ.λ. The ὁδῶν is curiously placed, apparently as an afterthought.

³ That the word ὑδραγωγός is commonly used for "supply ditches," i.e., channels just smaller than the main ditches (διώρυγες), is proven by the frequency with which these ὑδραγωγοί appear along with διώρυγες in the descriptions of property as boundaries. ἀναβολή is here used in a sense different from its customary usage, which is that of "banking up" ditches and dikes. See Paul Meyer in introd. to P. Giss, Vol. I, 42, pp. 52-53.

⁴ P. Oxy. IX, 1208, ll. 13-15.

Along with the $4/5$ *aroura* goes a proportional share in irrigators and a water machine,¹ evidently in good repair. The whole plot of 28 *arourae* was capable of easy irrigation because it was bounded on three sides by an irrigation ditch.² The water machines, therefore, would come into use when the water in the ditches had subsided to the point where it was well below the land level of the basin of which this farm was a part.

The inflow of the water from the irrigation canal or supply ditch into the farm plot was regulated by means of a dam or inlet called an *ἐμβλημα*. A letter of the fourth century, presumably from a farm manager to the farm owner, bids the owner come upon the next day: "Therefore please, sir, do not stay away from us tomorrow because of the starting forth of the water (*ἀφορμὴν τοῦ ὕδατος*), that we may be able to irrigate the large plot."³ This was after the seed had been put in.⁴ Evidently the right to open the inlet and fill the laterals, or field ditches, was restricted to certain days.⁵ The word *ἀφορμή* (starting forth) is very descriptive. The mechanism for controlling the inflow of water from the irrigation ditch is in one place called by the new word *ἐκβλυσμα*, that is, the place of the "gushing out" of the water.⁶ A recently published papyrus⁷ brings good evidence, however, that the word *ἐμβλημα*, found in papyri previously published,⁸ is the customary word for the place of inflow. A peasant makes complaint that on the 17th of the month Neos Sebastos (November) a certain Onnophris had made an attack upon an *ἐμβλημα*, named the *ἐμβλημα* of Taorbelles, built at no small expense;

¹ P. Oxy. IX, 1208, l. 14, *σὺν τῷ αἰροῦντι μέρει τῶν ὕδρευσμάτων καὶ μηχανῆς*.

² *Ibid.*, τῶν δὲ ὄλων γίτονες νότου ὁδοῦ καὶ ἐκ τῶν ἄλλων τριῶν ἀνέμων διώρυξ. Cf. P. Lond. I, No. 131, pp. 166 ff., where the use of the water wheel becomes constant in Pharmouthi and Pachon, which is April and May.

³ P. Amh. 143, ll. 14-20.

⁴ *Ibid.*, ll. 3-4.

⁵ The entire question of control of water rights and administration of water supply in Egypt needs thorough investigation.

⁶ Papyri Jandanae (ed. G. Spiess), Pt. II, No. 52, Leipzig, 1914. For the explanation see note to l. 14.

⁷ P. Ryl. 133, of 33 A.D.

⁸ P. Flor. 18, 12; P. Fay. 125, 9; B.G.U. 1040, 36; P. Teb. 378, 20. Cf. P. Ryl. 239, 3.

that he had partially torn it down, thereby causing danger that the whole thing be carried away, and *that the fields lying under it* would be turned into unsown land.¹ It is clear that this *ἐμβλημα* controlled the inflow of the water. It lay higher than the fields themselves, that is, than the basin level. Therefore, at flood time, and for some period thereafter, the water level in the canals must have been higher than the land level. The attack on this inlet dam occurred in November, apparently when the water had already been let in upon the land and was just about drained off, in preparation for the planting. Another flooding would have oversaturated the fields and delayed the sowing until too late.

The meaning here required for *ἐμβλημα*² fits the needs of the other passages in which the word appears. In P. Fay. 125 the passage reads *ἐὰν δέη* [. . . possibly *ποιεῖν* or *αἵρειν*?] *τὸ ἐμβλημα τὸ δαπανηθ[έν] παραδέξομαι*, "if it is necessary to build the inlet, I will make an allowance for what is expended." In P. Flor. I, 18, one Peneus offers to lease $3\frac{1}{2}$ *arourae* of public domain near the village of Theadelphia "near the inlet of the 8 *arourae* plot," *πρὸς μὲν ἐμβλήματι ὀκταροῦρου ἀρούρας τρέϊς ἡμισύ*. P. Teb. II, 378, is an offer to lease private land in which the lessee agrees to attend to the annual upkeep of the holding. The work specified in this portion of the lease is "the diking, irrigating, ploughing, hoeing, banking of main and supply ditches, building of dams (*ἐμβλημάτων οἰκοδομάς*), weeding, gathering of stalks(?) and all other works which are fitting."³ Here the immediate connection of strengthening the main and supply ditches (against seepage primarily) and the building of the *ἐμβλήματα*, or inflow dams, is apparent, although the phraseology gives us no definite idea of the nature of the inflow dam.⁴

¹ P. Ryl. 132, ll. 18-22: *Ἐξ οὗ κινδυνεύει τῷ ὀλωι ἐξαρθῆναι καὶ τὰ ὑποκείμενα τοῦτῃ ἐδάφῃ οὐκ ὀλίγα εἰς ἄσπορον ἐκτραπήναι*.

² Vitelli's interpretation of *ἐμβλημα* as a dike (P. Flor. I, 18, l. 12, note) is ruled out by P. Ryl. 133, and P. Teb. II, 378, where the diking, *περιχωματισμούς*, has already been mentioned. *ἐμβλημάτων οἰκοδομάς* necessitates another meaning for *ἐμβλημα* than "dike."

³ P. Teb. II, 378, ll. 18-22. The translation of *σιφωνολογία* as "gathering of stalks" is probably incorrect. I repeat the editors' version, however, because I have not yet had time to satisfy myself as to its real significance.

⁴ In B.G.U. IV, 1040, ll. 24, 36, the meaning "inlet" is as applicable as anything else. The connection is vague and the passage indecisive.

The recto of the papyrus which gave us the Athenian Constitution of Aristotle is a very instructive document for the laborious and exacting work upon an Egyptian farm. It is the daily accounting of a farm manager, named Didymus, to the farm owner, and gives receipts and expenditures, including also the tasks at which, from day to day, those farm hands who were regularly employed on the place were working.¹ Every day in Thoth (September) we find a number of farm hands, usually four or five, busied with irrigation, ἀντλοῦντες. This does not mean working the water wheel, because on Thoth 1 we have three men working at irrigating, and a fourth, distinctly separated from them, who is assisting the wheel-worker at the ὄργανον.² Through Phaophi (October), up to the 26th, this work of irrigation continues with few breaks, usually employing four or five men daily. On the 5th of Phaophi we have a curious entry. As usual the hands are busy with irrigating (ἀντλοῦντες). Then follows the entry: "Pay of the workman being in the cut before the water, for the irrigating (ποτισθῆναι) of the high place."³ The farm dealt with in these accounts was chiefly flooded land (βεβρεγμένη). Here, however, we have a portion of land lying high, which is not covered by the flood water, but is being irrigated by means of a rather deep cut into which the water may flow from the flooded area. This is evidently the ἄβροχος γῆ. As contrasted with the flooded land, it is not inundated. As contrasted with the dry land, it is capable of irrigation by additional and deep rilling.

¹ P. Lond. I, No. 131, pp. 166 ff.

² *Ibid.*, ll. 25–26. For μηχανάριος as the man who turns the water wheel see l. 32 and No. 131, l. 51 (p. 190), Δημητρίῳ μηχαναρίῳ μίσθ(ωσις) κυκλεύτ(ου). Cf. P. Ryl. 157, ll. 15–17.

The verb ἀντλεῖν is to be interpreted in a general sense as designating any type of irrigation through field laterals. The water may be lifted over from the main ditch by a system of chain buckets and poured into the field ditches (P. Flor. I, 16, l. 21; P. Flor. II, 150; P.S.I, I, 60); or it may be let into the field laterals through a dam of some sort. In P. Lond. I, 131, p. 166, the latter method is meant by ἀντλοῦντες throughout the account, because a separate expenditure is always recorded, when the water wheel is used, for the hand or hands (κυκλευταί) who worked the water machines. See, in ll. 492–95, the entry for Mecheir 4.

ποτίζειν is also used for either type of irrigating, either by opening a sluice, as in P. Amh. 143, or by lifting the water, as in P. Ryl. 157.

³ P. Lond. I, No. 131, p. 175, ll. 198–99: μίσθω(σις) ἐργάτο(ν) ὄντο(ς) ἐν τῇ τώμῃ πρὸ τοῦ ὕδατο(ς) πρὸς τὸ ποτισθῆναι τὸ ὑψηλο(ν) τόπιον. Cf. l. 228, τόμφ. (Herwerden suggests in *Lexicon Graecum*, ed. 1, p. 838, ὑδροτόμφ) πρὸς τὸ τὰς ἀρούρας ποτισθῆναι κατὰ μείος, "little by little."

If the additional labor of deep ditching is not resorted to, the "unflooded" land remains only relatively productive, like the "dry" land. It can be used for hay planting and the like, but will not be adaptable for grain-raising. If by ditching and capillary attraction of the moisture the *ἄβροχος* becomes irrigated, it is called *ἐπηντλημένη γῆ*, i.e., "artificially irrigated" land. The distinction between the *ἄβροχος* which is only potentially productive, and that part of the *ἄβροχος* which has been made actually productive by putting the requisite labor upon it (the *ἐπηντλημένη*), is distinctly maintained in a group of documents of the period of the empire.¹

The particular estate just discussed contained vine land as well as grain land. The method of irrigation on the two types of land after the subsidence of the flood does not seem to have been different. On Tybi 24 (January 19), we find an entry of 2 drachmas paid out for "irrigating into the seed land," *ἀντλοῦντες εἰς τὸν σπóρον*.² Similar entries occur throughout the latter part of Tybi (26th–30th)³ and the first four days of Mecheir (January–February).⁴ On Mecheir 4, the water wheel comes into use, evidently because the water in the canals had begun to recede to the point where it was below the level of the fields.⁵ The account is entirely lacking for over two months, from Mecheir 4 (January 29) to Pharmouthi 26 (April 21), which carries us into the harvest season. From Pharmouthi 26 to Pachon 15 (May 10), where the account ends, the irrigation was obtained by lifting the water with some sort of chain of buckets, or *sakje*, upon the fields. It is evidently at this period that the water reservoir (*λάκκος*),⁶ with which the farm was supplied, was called upon.

¹ See the list in Kornemann and Meyer, *Griechische Papyri im Museum des Oberhessischen Geschichtsvereins zu Giessen* (P. Giss.), I, Nos. 4–7, Leipzig, 1910–12.

² P. Lond. I, 131, l. 401.

³ *Ibid.*, ll. 417, 420, 431, 439, 442.

⁴ *Ibid.*, ll. 475, 478, 489, 490, 492. There seem to be two kinds of irrigating contrasted in ll. 490 and 489, *τῶμη ἀντλοῦντες*, i.e., by rilling into the grainfields, and *ἡδὺλ () ἀντλοῦντες*. No explanation of the latter term has been offered, however, and *ἡδὺλ ()* in other parts of these accounts seems to have no connection with irrigation. *τῶμη* may also be interpreted "at the cut."

⁵ *Ibid.*, l. 495: *Κυκλεύτη κυκλεύοντι σὺν τῶι μηχαναρίῳ*.

⁶ *Ibid.*, ll. 622 and 633.

3. THE LAND REGISTERS AND METHOD OF DETERMINING LAND RENTS AND TAXES

The basis for determining the assessment of land taxes and rents in Egypt throughout the Ptolemaic and Roman periods was the local, or village, land register kept by the *comogrammateus*. The land was listed in two ways: first, according to the nature of its tenure, whether it was royal domain, temple domain, catocic land, or privately owned; second, according to its productive rating, whether flooded, unflooded (but capable of irrigation), or dry. For the first system of differentiation I shall use the term "administrative categories," for the second "production categories." On this village register the *comogrammateus* booked all matters affecting the taxes and their collection. It was the place of final reference upon all questions dealing with the land, even for questions of disputed land tenure,¹ and the source of all reports which the *comogrammateus* sent upward to his superior, the royal scribe of the nome.

The first list which the village scribe drew up was an estimate, based upon his returns of the foregoing years. This was corrected by a survey (*ἐπίσκεψις*) of the land made each year by the village officials after the planting had been done. The *comogrammateus* then formulated his final report, listing the land under administrative categories (royal or temple domain, cleruch land) and production categories (flooded, unflooded, dry), and stating the crops planted upon each holding under these types.² P. Teb. I, 71, of 114 B.C., is a characteristic report of this kind, made by the village scribe Menches, in which he gives a summary of the situation upon the royal domain³ around Kerkeosiris up to the twentieth of Phaophi (October) which was at the end of the inundation period: *προσάγγελμα τῆς βεβρεγμένης καὶ ἐσπαρμένης ἕως Φαῶφι κ.* From the register of the previous year (third year) Menches takes the information that 1,193 $\frac{1}{4}$ *arourae* had been sown. Of these he now reports, for the fourth

¹ See P. Teb. I, 30, where proof of a change in possession of 24 *arourae* of cleruch land near Kerkeosiris from one soldier to another is looked for in the register of the village, ll. 25 f.

² P. Teb. I, 60-83, and Appendix I.

³ For *ἐκφόριον* as "rental" only, see Wilcken, *Griechische Ostraka*, Leipzig, 1899, I, 185 ff. Fr. Preisigke, *Girowesen im griechischen Aegypten*, Strassburg, 1910, p. 98, n. 1, and p. 164, n. 8, has shown that it applies also to the payment on the life tenures of the cleruchs.

year, 1122 $\frac{1}{4}$ *arourae* as inundated (βεβρεγμένη), and 71 *arourae* as still lying under water. Upon these 71 *arourae* he cannot as yet make a report. Of the 1122 $\frac{1}{4}$ *arourae* of inundated land already free for cultivation, 104 *arourae* are sown. The remaining 1018 $\frac{1}{4}$ *arourae* are just being sown: λοιπαὶ δὲ ὑπὸ χεῖρα σπείρεσθαι.

The assessment in the Ptolemaic period rested upon such personal reports and inspections of the officials rather than upon declarations of the tenants of the lands of the state.¹ From the Roman period we have a number of actual declarations, ἀπογραφαί, made by land owners in all cases; and in all cases they are declarations of "unflooded" land. These declarations all contain the same essential statements, though differing slightly in particulars. They were handed in at the office of the *basilico-grammateus* (P. Teb. II, 324), or into the offices of the *strategus* and *basilico-grammateus* (P. Ham. 11).² A copy was deposited with the village scribe for examination (τὸ ἕσσον εἰς ἐξέτασιν).³ The method of address, however, may be to the village scribe,⁴ to the *basilico-grammateus*,⁵ to the village scribe and the *basilico-grammateus*,⁶ to the *strategus*, *basilico-grammateus*, and village scribe,⁷ or to the *strategus* alone.⁸ The general form and content are as follows:

According to the order of the prefect⁹ the landowner declares that his land, location given, was unflooded in the present year,

¹ Wilcken, *Papyruskunde*, I, 1, pp. 177-78. It would seem that these reports were called προσαγγέλματα τῆς βεβρεγμένης (P. Teb. I, 24 and 71; cf. προσαγγέλματα in P. Teb. I, 18, 19, 73, 78, l. 16), indicating that the inundated land was taken as the fixed and determining feature of the assessment report.

² There are, up to the present, eleven of these documents extant. The references for seven of them will be found in P. Ham. 11. To this list collected by Paul Meyer the following are to be added: P.S.I. III, 161; P. Oxy. VIII, 1113; XII, 1459, 1549.

³ P. Teb. II, 324; P. Ham. 11. In P.S.I. III, 161, we have the copy of the προεβύρεπος, probably the elder of the village peasants.

⁴ P. Oxy. VIII, 1113.

⁵ P. Grenf. II, 56; P. Oxy. XII, 1459, 1549.

⁶ P. Ham. 11.

⁷ B.G.U. 139; P. Teb. II, 324; P. Fay. 33. One of them, B.G.U. 198, is not addressed to any particular official.

⁸ P.S.I. III, 161.

⁹ In P. Ham. 11, and in P. Oxy. VIII, 1113, 2, the order was issued by the *procurator usiacus*; in P. Oxy. XII, 1459, by the prefects and the *epistrategus*. In P. Oxy. XII, 1549, the source of the order is not given (240 A.D.).

usually adding "therefore I hand in the declaration."¹ There are three obvious objections to the customary explanation that these are requests for the lowering of, or for total exemption from, the annual land tax:

1. If these were requests for tax exemption or lowering of taxes the prefect would certainly not have had to issue an order each year compelling the landowners to hand them in. People do not have to be compelled by order to seek a reduction in taxes.

2. The *ἄβροχος* or unflooded land actually paid as high or a higher tax than the flooded land. All the evidence so far extant is to this effect.

3. There is no intimation in any one of these declarations of a request for reduction of the land tax.

The correct setting and explanation for these *ἀπογραφαί* is given by Wilcken.² Contrary to the practice of the Ptolemaic period, under the Roman system the annual assessment was made on the basis of declarations handed in by the lessees of the state domain or by the landowner, which were required, however, only in case of some change in the productive quality of the particular farm concerned. Such changes would be brought about by the accidents of the inundation,³ or even by a shifting from one kind of crop to another. In short, declarations were demanded whenever any alteration occurred from the crop condition of the previous year which meant a financial loss or gain to the government. The fixed quantity in the determination of the assessment was the inundated land. The most important variable quantity was the *ἄβροχος γῆ*. If the farm plot was regularly flooded, *βεβρεγμένη*, its taxation was *ὁμόλογος* (which is to be translated "normal" or "uncontested"), unless this flooded land became waterlogged, *ὑφ' ὕδωρ*, *ἐμβροχος*, *καθ' ὕδατος*, or covered with sand, *ἐν ἄμμω*, *ὑφαμμος*. In any of these cases the

¹ *Διὸ ἐπιδιδωμι*, lacking in P. Fay. 33; Oxy. VIII, 1113; Oxy. XII, 1459 and 1549.

² In *Papyruskunde*, I, 1, pp. 207-8. For the older view, that these were requests for a lowering of taxes or rents because the land was "unflooded," see Otto Eger, *Zum ägyptischen Grundbuchwesen*, Leipzig, 1909, pp. 183 ff.

³ Wilcken, *op. cit.*

land became unproductive. If the land was "in normal condition," *ὁμολογος*, no declaration was expected.

The administrative procedure in regard to these *ἀπογραφαί* of unflooded land was that the prefect of Egypt, more rarely the *procurator usiacus* or the prefects and *epistrategus*, each year¹ sent out an order that the amount of the *ἄβροχος γῆ* should be declared. The landowner or, in the case of imperial domain,² the direct lessee then made the required *ἀπογραφή*, giving his name and the name of the existing tenant.

From the declarations which he received the village scribe listed the amount of the unflooded land within the district of his competence, in its relation to the amount of the flooded land, giving the names of the owner or direct lessee of unflooded land in each case, and the taxes or rent due from each category. After this list was completed it was given to a committee of inspection (*ἐπίσκεψις*), who after the inspection wrote upon the margin the actual amount of the land unflooded (*ἄβροχος γῆ*), made on this basis a readjustment of the taxes, and figured up the amounts due to the government from the flooded and the unflooded land. This is the stage of the tax proceeding on grain land which we have represented in P. Brux. I and P. Ryl. 426. The inspectors wrote upon the list prepared by the village scribe as follows: *ὑπ(ορίθεται) ? ἄρourαι*———*ὧν ἐπ(εσκέφθησαν) ἄβρόχου*———*νείλ(οβρόχου)*———: "the estimate was (so many *arourae*), of which (so many *arourae*) proved on inspection to be unflooded, the remainder flooded."³

The actual process followed by the various village scribes in the keeping of these public accounts undoubtedly differed. P. Lond. III, 604, pp. 70ff., is a list, prepared by a village scribe, of the individual landholders, with the administrative types of land given (royal domain, temple land, private land), and the amount and productive

¹ The erroneous view that the prefect did not issue his decree each year arises from the total misunderstanding of the *ἄβροχος γῆ*. It still persists in P. Oxy. XII, 1459, despite Wilcken's correct conclusion in *Papyruskunde*, I, 1, p. 204.

² Cf. P. Ryl. 209, n. 10. The entire procedure in the case of the *ἄβροχος* is outlined there.

³ P. Brux. I, col. vi, in Wilcken, *Papyruskunde*, *Chrestomathie*, No. 236. Cf. P. Ryl. 426, frag. 4, *ἐπ(εσκέφθησαι) ἄβρ(όχου) ἄρ(ουραι) εἴκοσι ὀκτώ*].

character of the land in each case. The purpose of this list does not appear clearly defined in the introduction of the editors. I therefore cite in translation enough of it to give a clear understanding of its character:

From Besas, also called Soterichus, *comogrammateus* of Crocodilopolis and the villages appertaining to it, list of the flooded seed land, by individuals and categories, for the seventh year of Tiberius Claudius Caesar Augustus Germanicus Imperator (47 A.D.), of the farms upon the mainland; and—of the royal domain, temple land, and private land—the *additionally irrigated¹ arourae* of the seed land of the seventh year, *to which will be added also the lands hereafter known to have been flooded and artificially irrigated.*²

Of Soter, son of Areius, private land, *arourae* $8\frac{3}{4}$.

Of the wife of Latron, bath attendant, $\frac{3}{4}$ *artaba* land, *arourae* $3\frac{1}{2}$, $\frac{1}{16}$.

Of Hermius, son of Isidor, village scribe, royal domain, *arourae* $1\frac{1}{2}$.

Of Theodoros, son of Pancrateus, royal domain, *arourae* $\frac{1}{16}$, one *artaba* land, *arourae* 2.

Of the city officials, through the prytan(es), temple land, *arourae* 1.

There are some 163 more of these individual entries in the portion of this papyrus as it has been published.

Evidently the village scribe Besas had made this list in addition to the preparatory estimate which his office had drawn up for use of the inspectors. From the return of the inspectors, the relative amounts of flooded and unflooded land, "when known," were to be filled in upon this report.³

On the basis of information thus obtained and tabulated the village scribes formulated and sent upward to the higher bureaus the record of taxation, or rent in the case of imperial domains, actually due in kind and to be exacted (*eis ἀπαίτησιν*) on the grain lands which were flooded and unflooded (B.G.U. I. 84; P. Ryl. 209). Naturally copies of these reports were kept in the offices of the

¹ Παραβεβρε(γμένων) ἀρο(ύρων) σπ(ερματισμῶν), which I can only explain as the ἀβροχος and ἐπηνητλημένη γῆ, that is, "the unflooded and artificially irrigated land."

² P. Lond. III, 604, p. 71, ll. 6–8, βασιλ(ικῆς) δὲ καὶ ἰε[ρ]ῆς καὶ ἰδιωτικῆς παραβεβρε(μένων) ἀρο(ύρων) σπ(ερματισμῶν) τοῦ ζ' L [.]. ὧ προσέσται καὶ τὰ μετὰ [ταῦτα] προσγνοσθ[έντα] β[εβρ]έ[χθαι] καὶ ἐπεντλῆσθαι.

³ P. Ryl. 207a, second century, from the Hermopolite nome, is a summary of land, arranged by plots (γύβαι), made up after the inspection. It gives the amount of land in *arourae* and its production categories, ἀβροχος, ἐπηνητλημένη, χερσάβροχος, "unflooded," "artificially irrigated," "dry," but does not give the amounts due in kind to the state.

village scribes. Beside the general inspectors of grain lands there were special inspectors for olive groves; and possibly, also, separate inspections were made of land which had become unproductive by being waterlogged ($\psi\phi'$ $\psi\delta\omega\rho$), by the imperial procurators, though this activity of the imperial procurators may be confined to imperial estates.¹

In a succeeding article I shall consider the rate of the taxation upon the unflooded land and the consequent attitude of the peasant landowner, the government lessee, and the tenant, as disclosed chiefly in the land leases. It suffices, for the present, to state that the policy of the Egyptian government was to exact a high rate of taxes and rents from this type of land, even as compared with the very productive flooded land.

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¹ P. Ham. 12, Introduction. Cf. Wilcken, *Papyruskunde*, *Chrestomathie*, No. 235.